



## SEQUENCE LISTING

<110> Chen, Hongyun  
Le Bihan, Stephane

<120> NOVEL ABCG4 TRANSPORTER AND USES THEREOF

<130> 100103.406

<140> US 10/090,455

<141> 2002-03-01

<160> 23

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 3455

<212> DNA

<213> Homo sapiens

<400> 1

```

gccaccatgg cggagaaggc gctggaggcc gtgggctgtg gactagggcc gggggctgtg 60
gccatggccg tgacgctgga ggacggggcg gaacccctg tgctgaccac gcacctgaag 120
aaggtggaga accacatcac tgaagcccag cgcttctccc acctgccaa gcgctcagcc 180
gtggacatcg agttcgtgga gctgtcctat tccgtgcggg aggggccctg ctggcgcaaa 240
aggggttata agacccttct caagtgcctc tcaggtaaatt tctgccgccg ggagctgatt 300
ggcatcatgg gcccctcagg ggctggcaag tctacattca tgaacatctt ggcaggatac 360
agggagtctg gaatgaaggg gcagatcctg gttaatggaa ggccacggga gctgaggacc 420
ttccgcaaga tgctctgcta catcatgcaa gatgacatgc tgctgccgca cctcacggtg 480
ttggaagcca tgatggtctc tgctaacctg aatcttactg agaatcccga tgtgaaaaac 540
gatctcgtga cagagatcct gacggcactg ggccctgatgt cgtgctccca cacgaggaca 600
gcctgctct ctggcgggca gaggaagcgt ctggccatcg ccctggagct ggtcaacaac 660
ccgcctgtca tgttctttga tgagcccacc agtggctctg atagcgctc ttgtttccaa 720
gtggtgtccc tcatgaagtc cctggcacag gggggccgta ccatcatctg caccatccac 780
cagcccagtg ccaagctctt tgagatgttt gacaagctct acatcctgag ccagggtcag 840
tgcatcttca aaggagtggg caccaacctg atcccctatc taaagggact cggcttgcat 900
tgccccacct accacaaccc ggetgacttc atcatcgagg tggcctctgg cgagtatgga 960
gacctgaacc ccatgttggt cagggtctgt cagaatgggc tgtgcgctat ggctgagaaq 1020
aagagcagcc ctgagaagaa cgaggtccct gcccctatgcc ctcttgctcc tccggaagtg 1080
gatcccattg aaagccacac ctttgccacc agcaccctca cacagttctg catcctcttc 1140
aagaggacct tccgtgcat cctcagggac acggtcctga cccacctacg gttcatgtcc 1200
cacgtggtta ttggcggtct catcggcctc ctctacctgc atattggcga cgatgccagc 1260
aaggtcttca acaacaccgg ctgcctcttc ttctccatgc tgttctcat gttcgccgcc 1320
ctcatgccaa ctgtgtcac cttcccctta gagatggcgg tcttcatgag ggagcacctc 1380
aactactggt acagcctcaa agcgtattac ctggccaaga ccatggctga cgtgcccttt 1440
caggtggtgt gtccggtggt ctactgcagc attgtgtact ggatgacggg ccagcccgtc 1500
gagaccagcc gcttctgtct cttctcagcc ctggccaccg ccaccgcctt ggtggcccaa 1560
tctttggggc tgctgatcgg agctgcttcc aactccctac aggtggccac ttttgtgggc 1620
ccagttaccg ccatccctgt cctctgttcc tccggttct ttgtcagctt caagaccatc 1680
cccacttacc tgcaatggag ctctatctc tcctatgtca ggtatggctt tgaggggtgtg 1740
atcctgacga tctatggcat ggagcgagga gacctgacat gtttagagga acgctgcccg 1800

```

```

ttccgggagc cacagagcat cctccgagcg ctggatgtgg aggatgccaa gctctacatg 1860
gacttcctgg tcttgggcat cttcttcccta gccctgcggc tgctggccta ccttgtgctg 1920
cgttaccggg tcaagtcaga gagatagagg cttgccccag cctgtacccc agccccgtca 1980
gcaggaagcc cccagtccca gccctttggg actgttttaa ccttatagac ttgggcactg 2040
gttcctggcg gggctatcct ctccctccctt ggctcctcca caggctggct gtcggactgc 2100
gctcccagcc tgggctctgg gagtgggggc tccagccctc cccactatgc ccaggagtct 2160
tcccaagttg atgcggtttg tagcttcctc cctactctct ccaacacctg catgcaaaga 2220
ctactgggag gctgctgcct ccttcctgcc catggcaccc tcctctgctg tctgcctggg 2280
agccctaggc tctctagggc cccacttaca actgaccaa gtggccccct ctgggggtcc 2340
ccaccacaca agtgtttgta aactgggctg ctataagggt ggagttccag ggctgggccc 2400
tggtggagtc cactggaagt cccattatgg atgttgaaat ggacagggaa ggactctgga 2460
agtctcttcc tctcctcctt cttctctcca cccctagacc ctggctgact tggacaatct 2520
gccaggacag aagctggggt ttctgtctag gtcaccactc ccaatcctgg ggattggaga 2580
ggcctggggc tgtgggatgc cccatcccc tccccatcac ctttgggtgg ggacgggcct 2640
ggtggcacct gtgcaataat gtctgtgttt ctctcccacc tgccactgga actggagaat 2700
gcactttatt ctgggcgggg ggtgagtggg ggaagaccca accctccttt ctgctgccc 2760
ctaacgcatg cacggtctcg tgatgctccc tccctctccg gagtgcacag cacatacatg 2820
agaacaggcc atctcagccc tacacacttg ccatccccta cagcacagag gaagagtgat 2880
ggtggcatgc tggtgggtgc ggtgctggt gggaggacag tgccaacctc ctctgggga 2940
tcccatgttg gagactctaa ggataaggct ggtgctgccc aggggtgtcta caggaactgc 3000
aggtgtctac cccaagtct tccctcctcc caagccaggg gtggcacagg gcactagatc 3060
cctggagttc aggaaccaac acaagcaca ccacgggcat aagttggcct tggccactgc 3120
caccacggc cctccttttg tgctccatgc tggcatcttc actcccctac cccttcccc 3180
gccactgctg ctattcaaaa cttctgtcca tgtccctcca ctgttcctat cagcaggtgg 3240
cccctgggca tcagaacagc ctgccctggg caccaggtgg cagacacact cagagcatgt 3300
ctggctttcc tggtgggtcc aggtcattc tgcttctgat ttcccctccc ccagggtc 3360
ttttccccct ttttctgta cacatccctg tctacctct ctcaccctgc cacagattct 3420
tcctatcaca cagggatgcc agttgtatgt gtggg 3455

```

<210> 2

<211> 646

<212> PRT

<213> Homo sapiens

<400> 2

```

Met Ala Glu Lys Ala Leu Glu Ala Val Gly Cys Gly Leu Gly Pro Gly
 1           5           10          15
Ala Val Ala Met Ala Val Thr Leu Glu Asp Gly Ala Glu Pro Pro Val
 20          25          30
Leu Thr Thr His Leu Lys Lys Val Glu Asn His Ile Thr Glu Ala Gln
 35          40          45
Arg Phe Ser His Leu Pro Lys Arg Ser Ala Val Asp Ile Glu Phe Val
 50          55          60
Glu Leu Ser Tyr Ser Val Arg Glu Gly Pro Cys Trp Arg Lys Arg Gly
 65          70          75          80
Tyr Lys Thr Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu
 85          90          95
Leu Ile Gly Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met
100          105          110
Asn Ile Leu Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu
115          120          125
Val Asn Gly Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys
130          135          140
Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Leu Glu

```

145                      150                      155                      160  
 Ala Met Met Val Ser Ala Asn Leu Asn Leu Thr Glu Asn Pro Asp Val  
                                  165                      170                      175  
 Lys Asn Asp Leu Val Thr Glu Ile Leu Thr Ala Leu Gly Leu Met Ser  
                                  180                      185                      190  
 Cys Ser His Thr Arg Thr Ala Leu Leu Ser Gly Gly Gln Arg Lys Arg  
                                  195                      200                      205  
 Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe  
                                  210                      215                      220  
 Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val  
 225                                   230                      235                      240  
 Ser Leu Met Lys Ser Leu Ala Gln Gly Gly Arg Thr Ile Ile Cys Thr  
                                  245                      250                      255  
 Ile His Gln Pro Ser Ala Lys Leu Phe Glu Met Phe Asp Lys Leu Tyr  
                                  260                      265                      270  
 Ile Leu Ser Gln Gly Gln Cys Ile Phe Lys Gly Val Val Thr Asn Leu  
                                  275                      280                      285  
 Ile Pro Tyr Leu Lys Gly Leu Gly Leu His Cys Pro Thr Tyr His Asn  
                                  290                      295                      300  
 Pro Ala Asp Phe Ile Ile Glu Val Ala Ser Gly Glu Tyr Gly Asp Leu  
 305                                   310                      315                      320  
 Asn Pro Met Leu Phe Arg Ala Val Gln Asn Gly Leu Cys Ala Met Ala  
                                  325                      330                      335  
 Glu Lys Lys Ser Ser Pro Glu Lys Asn Glu Val Pro Ala Pro Cys Pro  
                                  340                      345                      350  
 Pro Cys Pro Pro Glu Val Asp Pro Ile Glu Ser His Thr Phe Ala Thr  
                                  355                      360                      365  
 Ser Thr Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser  
                                  370                      375                      380  
 Ile Leu Arg Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val  
 385                                   390                      395                      400  
 Val Ile Gly Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp  
                                  405                      410                      415  
 Ala Ser Lys Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu  
                                  420                      425                      430  
 Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu  
                                  435                      440                      445  
 Glu Met Ala Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu  
                                  450                      455                      460  
 Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val  
 465                                   470                      475                      480  
 Val Cys Pro Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln  
                                  485                      490                      495  
 Pro Ala Glu Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala  
                                  500                      505                      510  
 Thr Ala Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser  
                                  515                      520                      525  
 Asn Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro  
                                  530                      535                      540  
 Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr  
 545                                   550                      555                      560  
 Tyr Leu Gln Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu  
                                  565                      570                      575  
 Gly Val Ile Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys

	580		585		590										
Leu	Glu	Glu	Arg	Cys	Pro	Phe	Arg	Glu	Pro	Gln	Ser	Ile	Leu	Arg	Ala
	595						600					605			
Leu	Asp	Val	Glu	Asp	Ala	Lys	Leu	Tyr	Met	Asp	Phe	Leu	Val	Leu	Gly
	610					615					620				
Ile	Phe	Phe	Leu	Ala	Leu	Arg	Leu	Leu	Ala	Tyr	Leu	Val	Leu	Arg	Tyr
	625				630					635					640
Arg	Val	Lys	Ser	Glu	Arg										
					645										

&lt;210&gt; 3

&lt;211&gt; 1941

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3

```

atggcggaga aggcgctgga ggcggtgggc tgtggactag ggccgggggc tgtggccatg 60
gccgtgacgc tggaggacgg ggcggaaccc cctgtgctga ccacgcacct gaagaaggtg 120
gagaaccaca tcaactgaagc ccagcgcttc tcccacctgc ccaagcgctc agccgtggac 180
atcgagttcg tggagctgtc ctattccgtg cgggaggggc cctgctggcg caaaaggggt 240
tataagaccc ttctcaagtg cctctcaggt aaattctgcc gccgggagct gattggcatc 300
atggggccct caggggctgg caagtctaca ttcataaaca tcttggcagg atacagggag 360
tctggaatga aggggcagat cctgggttaat ggaaggccac gggagctgag gaccttccgc 420
aagatgtcct gctacatcat gcaagatgac atgctgctgc cgcacctcac ggtgttgaa 480
gccatgatgg tctctgctaa cctgaatctt actgagaatc ccgatgtgaa aaacgatctc 540
gtgacagaga tcctgacggc actgggcctg atgtcgtgct cccacacgag gacagccctg 600
ctctctggcg ggcagaggaa gcgtctggcc atcgccctgg agctggtcaa caaccgcct 660
gtcatgttct ttgatgagcc caccagtggg ctggatagcg cctcttgttt ccaagtgggt 720
tccctcatga agtccctggc acaggggggc cgtaccatca tctgcacat ccaccagccc 780
agtgccaaagc tctttgagat gtttgacaag ctctacatcc tgagccaggg tcagtgcatac 840
ttcaaaggag tgggtaccaa cctgatcccc tatctaaagg gactcggctt gcattgcccc 900
acctaccaca acccggtgta cttcatcatc gaggtggcct ctggcgagta tggagacctg 960
aaccocatgt tgttcagggc tgtgcagaat gggctgtgcg ctatggctga gaagaagagc 1020
agccctgaga agaacgaggt ccctgcccc tgcctcctt gtctccgga agtggatccc 1080
attgaaagcc acacctttgc caccagcacc ctacacagt tctgcatcct cttcaagagg 1140
accttctgt ccactctcag ggacacggtc ctgaccacc tacggttcat gtcccacgtg 1200
gttattggcg tgctcatcgg cctcctctac ctgcatattg gcgacgatgc cagcaaggtc 1260
ttcaacaaca ccggtgcct cttcttctcc atgctgttcc tcatgttcgc cgccctcatg 1320
ccaactgtgc tcaccttccc cttagagatg gcggtcttca tgaggagca cctcaactac 1380
tggtacagcc tcaaagcgta ttacctggcc aagaccatgg ctgacgtgcc ctttcaggtg 1440
gtgtgtccgg tgggtactat cagcattgtg tactggatga cgggccagcc cgctgagacc 1500
agccgcttcc tgctcttctc agccctggcc accgccaccg ccttgggtggc ccaatctttg 1560
gggctgctga tcggagctgc ttccaactcc ctacaggtgg ccacttttgt gggcccagtt 1620
accgccatcc ctgtcctctt gttctccggc ttctttgtca gttcaagac catccccact 1680
tacctgcaat ggagctccta tctctcctat gtcaggtatg gctttgaggg tgtgatcctg 1740
acgatcatatg gcatggagcg aggagacctg acatgtttag aggaacgctg cccgttccgg 1800
gagccacaga gcatcctccg agcgctggat gtggaggatg ccaagctcta catggacttc 1860
ctgggtcttg gcatcttctt cctagccctg cggctgctgg cctaccttgt gctgcgttac 1920
cggggtcaagt cagagagata g

```

&lt;210&gt; 4

&lt;211&gt; 674

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 4

```

Met Ala Ala Phe Ser Val Gly Thr Ala Met Asn Ala Ser Ser Tyr Ser
 1          5          10          15
Ala Glu Met Thr Glu Pro Lys Ser Val Cys Val Ser Val Asp Glu Val
      20          25          30
Val Ser Ser Asn Met Glu Ala Thr Glu Thr Asp Leu Leu Asn Gly His
      35          40          45
Leu Lys Lys Val Asp Asn Asn Leu Thr Glu Ala Gln Arg Phe Ser Ser
      50          55          60
Leu Pro Arg Arg Ala Ala Val Asn Ile Glu Phe Arg Asp Leu Ser Tyr
      65          70          75          80
Ser Val Pro Glu Gly Pro Trp Trp Arg Lys Lys Gly Tyr Lys Thr Leu
      85          90          95
Leu Lys Gly Ile Ser Gly Lys Phe Asn Ser Gly Glu Leu Val Ala Ile
      100          105          110
Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Leu Met Asn Ile Leu Ala
      115          120          125
Gly Tyr Arg Glu Thr Gly Met Lys Gly Ala Val Leu Ile Asn Gly Leu
      130          135          140
Pro Arg Asp Leu Arg Cys Phe Arg Lys Val Ser Cys Tyr Ile Met Gln
      145          150          155          160
Asp Asp Met Leu Leu Pro His Leu Thr Val Gln Glu Ala Met Met Val
      165          170          175
Ser Ala His Leu Lys Leu Gln Glu Lys Asp Glu Gly Arg Arg Glu Met
      180          185          190
Val Lys Glu Ile Leu Thr Ala Leu Gly Leu Leu Ser Cys Ala Asn Thr
      195          200          205
Arg Thr Gly Ser Leu Ser Gly Gly Gln Arg Lys Arg Leu Ala Ile Ala
      210          215          220
Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe Asp Glu Pro Thr
      225          230          235          240
Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val Ser Leu Met Lys
      245          250          255
Gly Leu Ala Gln Gly Gly Arg Ser Ile Ile Cys Thr Ile His Gln Pro
      260          265          270
Ser Ala Lys Leu Phe Glu Leu Phe Asp Gln Leu Tyr Val Leu Ser Gln
      275          280          285
Gly Gln Cys Val Tyr Arg Gly Lys Val Cys Asn Leu Val Pro Tyr Leu
      290          295          300
Arg Asp Leu Gly Leu Asn Cys Pro Thr Tyr His Asn Pro Ala Asp Phe
      305          310          315          320
Val Met Glu Val Ala Ser Gly Glu Tyr Gly Asp Gln Asn Ser Arg Leu
      325          330          335
Val Arg Ala Val Arg Glu Gly Met Cys Asp Ser Asp His Lys Arg Asp
      340          345          350
Leu Gly Gly Asp Ala Glu Val Asn Pro Phe Leu Trp His Arg Pro Ser
      355          360          365
Glu Glu Val Lys Gln Thr Lys Arg Leu Lys Gly Leu Arg Lys Asp Ser
      370          375          380
Ser Ser Met Glu Gly Cys His Ser Phe Ser Ala Ser Cys Leu Thr Gln
      385          390          395          400
Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser Ile Met Arg Asp Ser

```

405 410 415  
 Val Leu Thr His Leu Arg Ile Thr Ser His Ile Gly Ile Gly Leu Leu  
 420 425 430  
 Ile Gly Leu Leu Tyr Leu Gly Ile Gly Asn Glu Thr Lys Lys Val Leu  
 435 440 445  
 Ser Asn Ser Gly Phe Leu Phe Phe Ser Met Leu Phe Leu Met Phe Ala  
 450 455 460  
 Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu Glu Met Gly Val Phe  
 465 470 475 480  
 Leu Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu Lys Ala Tyr Tyr Leu  
 485 490 495  
 Ala Lys Thr Met Ala Asp Val Pro Phe Gln Ile Met Phe Pro Val Ala  
 500 505 510  
 Tyr Cys Ser Ile Val Tyr Trp Met Thr Ser Gln Pro Ser Asp Ala Val  
 515 520 525  
 Arg Phe Val Leu Phe Ala Ala Leu Gly Thr Met Thr Ser Leu Val Ala  
 530 535 540  
 Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser Thr Ser Leu Gln Val  
 545 550 555 560  
 Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro Val Leu Leu Phe Ser  
 565 570 575  
 Gly Phe Phe Val Ser Phe Asp Thr Ile Pro Thr Tyr Leu Gln Trp Met  
 580 585 590  
 Ser Tyr Ile Ser Tyr Val Arg Tyr Gly Phe Glu Gly Val Ile Leu Ser  
 595 600 605  
 Ile Tyr Gly Leu Asp Arg Glu Asp Leu His Cys Asp Ile Asp Glu Thr  
 610 615 620  
 Cys His Phe Gln Lys Ser Glu Ala Ile Leu Arg Glu Leu Asp Val Glu  
 625 630 635 640  
 Asn Ala Lys Leu Tyr Leu Asp Phe Ile Val Leu Gly Ile Phe Phe Ile  
 645 650 655  
 Ser Leu Arg Leu Ile Ala Tyr Leu Val Leu Arg Tyr Lys Ile Arg Ala  
 660 665 670  
 Glu Arg

<210> 5  
 <211> 655  
 <212> PRT  
 <213> Homo sapiens

<400> 5  
 Met Ser Ser Ser Asn Val Glu Val Phe Ile Pro Val Ser Gln Gly Asn  
 1 5 10 15  
 Thr Asn Gly Phe Pro Ala Thr Val Ser Asn Asp Leu Lys Ala Phe Thr  
 20 25 30  
 Glu Gly Ala Val Leu Ser Phe His Asn Ile Cys Tyr Arg Val Lys Leu  
 35 40 45  
 Lys Ser Gly Phe Leu Pro Cys Arg Lys Pro Val Glu Lys Glu Ile Leu  
 50 55 60  
 Ser Asn Ile Asn Gly Ile Met Lys Pro Gly Leu Asn Ala Ile Leu Gly  
 65 70 75 80  
 Pro Thr Gly Gly Gly Lys Ser Ser Leu Leu Asp Val Leu Ala Ala Arg

				85					90					95	
Lys	Asp	Pro	Ser	Gly	Leu	Ser	Gly	Asp	Val	Leu	Ile	Asn	Gly	Ala	Pro
			100					105					110		
Arg	Pro	Ala	Asn	Phe	Lys	Cys	Asn	Ser	Gly	Tyr	Val	Val	Gln	Asp	Asp
		115					120					125			
Val	Val	Met	Gly	Thr	Leu	Thr	Val	Arg	Glu	Asn	Leu	Gln	Phe	Ser	Ala
	130					135					140				
Ala	Leu	Arg	Leu	Ala	Thr	Thr	Met	Thr	Asn	His	Glu	Lys	Asn	Glu	Arg
145					150					155					160
Ile	Asn	Arg	Val	Ile	Glu	Glu	Leu	Gly	Leu	Asp	Lys	Val	Ala	Asp	Ser
				165				170						175	
Lys	Val	Gly	Thr	Gln	Phe	Ile	Arg	Gly	Val	Ser	Gly	Gly	Glu	Arg	Lys
			180					185					190		
Arg	Thr	Ser	Ile	Gly	Met	Glu	Leu	Ile	Thr	Asp	Pro	Ser	Ile	Leu	Ser
		195					200					205			
Leu	Asp	Glu	Pro	Thr	Thr	Gly	Leu	Asp	Ser	Ser	Thr	Ala	Asn	Ala	Val
	210					215					220				
Leu	Leu	Leu	Leu	Lys	Arg	Met	Ser	Lys	Gln	Gly	Arg	Thr	Ile	Ile	Phe
225					230					235					240
Ser	Ile	His	Gln	Pro	Arg	Tyr	Ser	Ile	Phe	Lys	Leu	Phe	Asp	Ser	Leu
				245					250					255	
Thr	Leu	Leu	Ala	Ser	Gly	Arg	Leu	Met	Phe	His	Gly	Pro	Ala	Gln	Glu
			260					265					270		
Ala	Leu	Gly	Tyr	Phe	Glu	Ser	Ala	Gly	Tyr	His	Cys	Glu	Ala	Tyr	Asn
		275					280					285			
Asn	Pro	Ala	Asp	Phe	Phe	Leu	Asp	Ile	Ile	Asn	Gly	Asp	Ser	Thr	Ala
	290					295					300				
Val	Ala	Leu	Asn	Arg	Glu	Glu	Asp	Phe	Lys	Ala	Thr	Glu	Ile	Ile	Glu
305					310					315					320
Pro	Ser	Lys	Gln	Asp	Lys	Pro	Leu	Ile	Glu	Lys	Leu	Ala	Glu	Ile	Tyr
				325					330					335	
Val	Asn	Ser	Ser	Phe	Tyr	Lys	Glu	Thr	Lys	Ala	Glu	Leu	His	Gln	Leu
			340					345					350		
Ser	Gly	Gly	Glu	Lys	Lys	Lys	Lys	Ile	Thr	Val	Phe	Lys	Glu	Ile	Ser
		355					360					365			
Tyr	Thr	Thr	Ser	Phe	Cys	His	Gln	Leu	Arg	Trp	Val	Ser	Lys	Arg	Ser
	370					375					380				
Phe	Lys	Asn	Leu	Leu	Gly	Asn	Pro	Gln	Ala	Ser	Ile	Ala	Gln	Ile	Ile
385					390					395					400
Val	Thr	Val	Val	Leu	Gly	Leu	Val	Ile	Gly	Ala	Ile	Tyr	Phe	Gly	Leu
				405					410					415	
Lys	Asn	Asp	Ser	Thr	Gly	Ile	Gln	Asn	Arg	Ala	Gly	Val	Leu	Phe	Phe
			420					425					430		
Leu	Thr	Thr	Asn	Gln	Cys	Phe	Ser	Ser	Val	Ser	Ala	Val	Glu	Leu	Phe
		435													

<400>	6														
Met	Gly	Asp	Leu	Ser	Ser	Leu	Thr	Pro	Gly	Gly	Ser	Met	Gly	Leu	Gln
1				5					10					15	
Val	Asn	Arg	Gly	Ser	Gln	Ser	Ser	Leu	Glu	Gly	Ala	Pro	Ala	Thr	Ala
			20					25					30		
Pro	Glu	Pro	His	Ser	Leu	Gly	Ile	Leu	His	Ala	Ser	Tyr	Ser	Val	Ser
		35				40					45				
His	Arg	Val	Arg	Pro	Trp	Trp	Asp	Ile	Thr	Ser	Cys	Arg	Gln	Gln	Trp
	50					55					60				
Thr	Arg	Gln	Ile	Leu	Lys	Asp	Val	Ser	Leu	Tyr	Val	Glu	Ser	Gly	Gln
65					70					75					80
Ile	Met	Cys	Ile	Leu	Gly	Ser	Ser	Gly	Ser	Gly	Lys	Thr	Thr	Leu	Leu
				85				90						95	
Asp	Ala	Met	Ser	Gly	Arg	Leu	Gly	Arg	Ala	Gly	Thr	Phe	Leu	Gly	Glu
			100					105					110		
Val	Tyr	Val	Asn	Gly	Arg	Ala	Leu	Arg	Arg	Glu	Gln	Phe	Gln	Asp	Cys
		115				120						125			
Phe	Ser	Tyr	Val	Leu	Gln	Ser	Asp	Thr	Leu	Leu	Ser	Ser	Leu	Thr	Val
	130					135					140				
Arg	Glu	Thr	Leu	His	Tyr	Thr	Ala	Leu	Leu	Ala	Ile	Arg	Arg	Gly	Asn
145					150					155				160	
Pro	Gly	Ser	Phe	Gln	Lys	Lys	Val	Glu	Ala	Val	Met	Ala	Glu	Leu	Ser
				165				170						175	
Leu	Ser	His	Val	Ala	Asp	Arg	Leu	Ile	Gly	Asn	Tyr	Ser	Leu	Gly	Gly
		180						185				190			
Ile	Ser	Thr	Gly	Glu	Arg	Arg	Arg	Val	Ser	Ile	Ala	Ala	Gln	Leu	Leu
	195						200				205				
Gln	Asp	Pro	Lys	Val	Met	Leu	Phe	Asp	Glu	Pro	Thr	Thr	Gly	Leu	Asp
	210					215					220				
Cys	Met	Thr	Ala	Asn	Gln	Ile	Val	Val	Leu	Leu	Val	Glu	Leu	Ala	Arg



225					230					235				240
Arg	Asn	Arg	Ile	Val	Val	Leu	Thr	Ile	His	Gln	Pro	Arg	Ser	Glu
				245					250					255
Phe	Gln	Leu	Phe	Asp	Lys	Ile	Ala	Ile	Leu	Ser	Phe	Gly	Glu	Leu
			260					265					270	
Phe	Cys	Gly	Thr	Pro	Ala	Glu	Met	Leu	Asp	Phe	Phe	Asn	Asp	Cys
		275					280					285		
Tyr	Pro	Cys	Pro	Glu	His	Ser	Asn	Pro	Phe	Asp	Phe	Tyr	Met	Asp
	290					295				300				Leu
Thr	Ser	Val	Asp	Thr	Gln	Ser	Lys	Glu	Arg	Glu	Ile	Glu	Thr	Ser
305					310					315				320
Arg	Val	Gln	Met	Ile	Glu	Ser	Ala	Tyr	Lys	Lys	Ser	Ala	Ile	Cys
				325					330					335
Lys	Thr	Leu	Lys	Asn	Ile	Glu	Arg	Met	Lys	His	Leu	Lys	Thr	Leu
		340						345					350	Pro
Met	Val	Pro	Phe	Lys	Thr	Lys	Asp	Ser	Pro	Gly	Val	Phe	Ser	Lys
		355					360					365		Leu
Gly	Val	Leu	Leu	Arg	Arg	Val	Thr	Arg	Asn	Leu	Val	Arg	Asn	Lys
	370					375					380			Leu
Ala	Val	Ile	Thr	Arg	Leu	Leu	Gln	Asn	Leu	Ile	Met	Gly	Leu	Phe
385					390					395				400
Leu	Phe	Phe	Val	Leu	Arg	Val	Arg	Ser	Asn	Val	Leu	Lys	Gly	Ala
				405					410					415
Gln	Asp	Arg	Val	Gly	Leu	Leu	Tyr	Gln	Phe	Val	Gly	Ala	Thr	Pro
		420						425					430	Tyr
Thr	Gly	Met	Leu	Asn	Ala	Val	Asn	Leu	Phe	Pro	Val	Leu	Arg	Ala
		435					440					445		Val
Ser	Asp	Gln	Glu	Ser	Gln	Asp	Gly	Leu	Tyr	Gln	Lys	Trp	Gln	Met
	450					455					460			Met
Leu	Ala	Tyr	Ala	Leu	His	Val	Leu	Pro	Phe	Ser	Val	Val	Ala	Thr
465					470					475				480
Ile	Phe	Ser	Ser	Val	Cys	Tyr	Trp	Thr	Leu	Gly	Leu	His	Pro	Glu
				485					490					495
Ala	Arg	Phe	Gly	Tyr	Phe	Ser	Ala	Ala	Leu	Leu	Ala	Pro	His	Leu
			500					505					510	Ile
Gly	Glu	Phe	Leu	Thr	Leu	Val	Leu	Leu	Gly	Ile	Val	Gln	Asn	Pro
		515					520					525		Asn
Ile	Val	Asn	Ser	Val	Val	Ala	Leu	Leu	Ser	Ile	Ala	Gly	Val	Leu
	530					535					540			Val
Gly	Ser	Gly	Phe	Leu	Arg	Asn	Ile	Gln	Glu	Met	Pro	Ile	Pro	Phe
545					550					555				Lys
Ile	Ile	Ser	Tyr	Phe	Thr	Phe	Gln	Lys	Tyr	Cys	Ser	Glu	Ile	Leu
				565					570					Val
Val	Asn	Glu	Phe	Tyr	Gly	Leu	Asn	Phe	Thr	Cys	Gly	Ser	Ser	Asn
			580					585					590	Val
Ser	Val	Thr	Thr	Asn	Pro	Met	Cys	Ala	Phe	Thr	Gln	Gly	Ile	Gln
			595				600					605		Phe
Ile	Glu	Lys	Thr	Cys	Pro	Gly	Ala	Thr	Ser	Arg	Phe	Thr	Met	Asn
	610					615					620			Phe
Leu	Ile	Leu	Tyr	Ser	Phe	Ile	Pro	Ala	Leu	Val	Ile	Leu	Gly	Ile
625					630					635				Val
Val	Phe	Lys	Ile	Arg	Asp	His	Leu	Ile	Ser	Arg				640
				645					650					

<210> 7  
 <211> 673  
 <212> PRT  
 <213> Homo sapiens

<400> 7

Met	Ala	Gly	Lys	Ala	Ala	Glu	Glu	Arg	Gly	Leu	Pro	Lys	Gly	Ala	Thr
1				5					10					15	
Pro	Gln	Asp	Thr	Ser	Gly	Leu	Gln	Asp	Arg	Leu	Phe	Ser	Ser	Glu	Ser
			20					25					30		
Asp	Asn	Ser	Leu	Tyr	Phe	Thr	Tyr	Ser	Gly	Gln	Pro	Asn	Thr	Leu	Glu
		35					40					45			
Val	Arg	Asp	Leu	Asn	Tyr	Gln	Val	Asp	Leu	Ala	Ser	Gln	Val	Pro	Trp
	50					55					60				
Phe	Glu	Gln	Leu	Ala	Gln	Phe	Lys	Met	Pro	Trp	Thr	Ser	Pro	Ser	Cys
65					70					75					80
Gln	Asn	Ser	Cys	Glu	Leu	Gly	Ile	Gln	Asn	Leu	Ser	Phe	Lys	Val	Arg
			85					90						95	
Ser	Gly	Gln	Met	Leu	Ala	Ile	Ile	Gly	Ser	Ser	Gly	Cys	Gly	Arg	Ala
			100					105					110		
Ser	Leu	Leu	Asp	Val	Ile	Thr	Gly	Arg	Gly	His	Gly	Gly	Lys	Ile	Lys
		115					120					125			
Ser	Gly	Gln	Ile	Trp	Ile	Asn	Gly	Gln	Pro	Ser	Ser	Pro	Gln	Leu	Val
	130					135					140				
Arg	Lys	Cys	Val	Ala	His	Val	Arg	Gln	His	Asn	Gln	Leu	Leu	Pro	Asn
145					150					155					160
Leu	Thr	Val	Arg	Glu	Thr	Leu	Ala	Phe	Ile	Ala	Gln	Met	Arg	Leu	Pro
				165					170					175	
Arg	Thr	Phe	Ser	Gln	Ala	Gln	Arg	Asp	Lys	Arg	Val	Glu	Asp	Val	Ile
			180					185					190		
Ala	Glu	Leu	Arg	Leu	Arg	Gln	Cys	Ala	Asp	Thr	Arg	Val	Gly	Asn	Met
	195						200					205			
Tyr	Val	Arg	Gly	Leu	Ser	Gly	Gly	Glu	Arg	Arg	Arg	Val	Ser	Ile	Gly
	210					215					220				
Val	Gln	Leu	Leu	Trp	Asn	Pro	Gly	Ile	Leu	Ile	Leu	Asp	Glu	Pro	Thr
225					230					235					240
Ser	Gly	Leu	Asp	Ser	Phe	Thr	Ala	His	Asn	Leu	Val	Lys	Thr	Leu	Ser
				245					250					255	
Arg	Leu	Ala	Lys	Gly	Asn	Arg	Leu	Val	Leu	Ile	Ser	Leu	His	Gln	Pro
		260						265					270		
Arg	Ser	Asp	Ile	Phe	Arg	Leu	Phe	Asp	Leu	Val	Leu	Leu	Met	Thr	Ser
		275					280					285			
Gly	Thr	Pro	Ile	Tyr	Leu	Gly	Ala	Ala	Gln	His	Met	Val	Gln	Tyr	Phe
	290					295					300				
Thr	Ala	Ile	Gly	Tyr	Pro	Cys	Pro	Arg	Tyr	Ser	Asn	Pro	Ala	Asp	Phe
305					310					315					320
Tyr	Val	Asp	Leu	Thr	Ser	Ile	Asp	Arg	Arg	Ser	Arg	Glu	Gln	Glu	Leu
				325					330					335	
Ala	Thr	Arg	Glu	Lys	Ala	Gln	Ser	Leu	Ala	Ala	Leu	Phe	Leu	Glu	Lys
			340					345					350		
Val	Arg	Asp	Leu	Asp	Asp	Phe	Leu	Trp	Lys	Ala	Glu	Thr	Lys	Asp	Leu
		355					360					365			
Asp	Glu	Asp	Thr	Cys	Val	Glu	Ser	Ser	Val	Thr	Pro	Leu	Asp	Thr	Asn

370		375		380	
Cys	Leu	Pro	Ser	Pro	Thr
385		390		395	400
Thr	Leu	Ile	Arg	Arg	Gln
		405		410	415
Leu	Leu	Ile	His	Gly	Ala
		420		425	430
Phe	Leu	Tyr	Phe	Gly	His
		435		440	445
Ala	Ala	Leu	Leu	Phe	Met
		450		455	460
Leu	Asp	Val	Ile	Ser	Lys
465				470	
Glu	Leu	Glu	Asp	Gly	Leu
				485	
Ile	Leu	Gly	Glu	Leu	Pro
				500	
Met	Pro	Thr	Tyr	Trp	Leu
				515	
Leu	Leu	His	Phe	Leu	Leu
				530	
Met	Ala	Leu	Ala	Ala	Ala
545				550	
Phe	Phe	Ser	Asn	Ala	Leu
				565	
Met	Ile	Asn	Leu	Ser	Ser
				580	
Val	Ser	Phe	Leu	Arg	Trp
				595	
Ser	Arg	Arg	Thr	Tyr	Lys
				610	
Ser	Gly	Asp	Lys	Ile	Leu
625				630	
Tyr	Ala	Ile	Tyr	Leu	Ile
				645	
Leu	Tyr	Tyr	Val	Ser	Leu
				660	
Trp					

<210> 8  
 <211> 627  
 <212> PRT  
 <213> Homo sapiens

<400> 8	
Met	Ala
1	5
His	Leu
	20
His	Leu
	35
Tyr	Ser
Val	Arg
Glu	Gly
Pro	Cys
Trp	Arg
Lys	Arg
Gly	Tyr
Lys	Thr
Thr	Thr
Val	Leu
Pro	Pro
Ala	Gln
Glu	Arg
Thr	Phe
Ile	Ser
His	Val
Asn	Glu
Val	Val
Ala	Leu
Ser	Ser
Arg	Thr
Thr	Thr
Val	Val
Phe	Gly
Gly	Met
Leu	Val
Ser	Thr
Pro	Pro
Leu	Leu
Asp	Asp
Glu	Glu
Ala	Ala
Gly	Gly
Pro	Pro
Met	Met
Ser	Ser
Leu	Leu
Val	Val
Ala	Ala
Arg	Arg
Asp	Asp
Thr	Thr
Pro	Pro
Leu	Leu
Arg	Arg
Asn	Asn
Ser	Ser
Ile	Ile
Thr	Thr
Glu	Glu
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Ile	Ile
Gly	Gly
His	His
Glu	Glu
Val	Val
Arg	Arg
Ser	Ser
Pro	Pro
Thr	Thr
Ala	Ala
Glu	Glu
Asp	Asp
Gly	Gly
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Asn	Asn
Gly	Gly
His	His
Glu	Glu
Val	Val
Arg	Arg
Ser	Ser
Pro	Pro
Leu	Leu
Thr	Thr
Ala	Ala
Glu	Glu
Asp	Asp
Gly	Gly
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr
Val	Val
Leu	Leu
Met	Met
Ala	Ala
Val	Val
Pro	Pro
Leu	Leu
Arg	Arg
Thr	Thr

50	55	60
Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu Leu Ile Gly		
65	70	75
Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met Asn Ile Leu		80
	85	90
Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu Val Asn Gly		95
	100	105
Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys Tyr Ile Met		110
	115	120
Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Leu Glu Ala Met Met		125
	130	135
Val Ser Ala Asn Leu Lys Leu Ser Glu Lys Gln Glu Val Lys Lys Glu		140
145	150	155
Leu Val Thr Glu Ile Leu Thr Ala Leu Gly Leu Met Ser Cys Ser His		160
	165	170
Thr Arg Thr Ala Leu Leu Ser Gly Gly Gln Arg Lys Arg Leu Ala Ile		175
	180	185
Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe Asp Glu Pro		190
	195	200
Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val Ser Leu Met		205
	210	215
Lys Ser Leu Ala Gln Gly Gly Arg Thr Ile Ile Cys Thr Ile His Gln		220
225	230	235
Pro Ser Ala Lys Leu Phe Glu Met Phe Asp Lys Leu Tyr Ile Leu Ser		240
	245	250
Gln Gly Gln Cys Ile Phe Lys Gly Val Val Thr Asn Leu Ile Pro Tyr		255
	260	265
Leu Lys Gly Leu Gly Leu His Cys Pro Thr Tyr His Asn Pro Ala Asp		270
	275	280
Phe Ile Ile Glu Val Ala Ser Gly Glu Tyr Gly Asp Leu Asn Pro Met		285
	290	295
Leu Phe Arg Ala Val Gln Asn Gly Leu Cys Ala Met Ala Glu Lys Lys		300
305	310	315
Ser Ser Pro Glu Lys Asn Glu Val Pro Ala Pro Cys Pro Pro Cys Pro		320
	325	330
Pro Glu Val Asp Pro Ile Glu Ser His Thr Phe Ala Thr Ser Thr Leu		335
	340	345
Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser Ile Leu Arg		350
	355	360
Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val Val Ile Gly		365
	370	375
Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp Ala Ser Lys		380
385	390	395
Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu Phe Leu Met		400
	405	410
Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu Glu Met Ala		415
	420	425
Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu Lys Ala Tyr		430
	435	440
Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val Val Cys Pro		445
	450	455
Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln Pro Ala Glu		460
465	470	475
Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala Thr Ala Leu		480

				485					490					495			
Val	Ala	Gln	Ser	Leu	Gly	Leu	Leu	Ile	Gly	Ala	Ala	Ser	Asn	Ser	Leu		
			500					505					510				
Gln	Val	Ala	Thr	Phe	Val	Gly	Pro	Val	Thr	Ala	Ile	Pro	Val	Leu	Leu		
		515					520					525					
Phe	Ser	Gly	Phe	Phe	Val	Ser	Phe	Lys	Thr	Ile	Pro	Thr	Tyr	Leu	Gln		
	530					535					540						
Trp	Ser	Ser	Tyr	Leu	Ser	Tyr	Val	Arg	Tyr	Gly	Phe	Glu	Gly	Val	Ile		
545				550						555					560		
Leu	Thr	Ile	Tyr	Gly	Met	Glu	Arg	Gly	Asp	Leu	Thr	Cys	Leu	Glu	Glu		
				565					570					575			
Arg	Cys	Pro	Phe	Arg	Glu	Pro	Gln	Ser	Ile	Leu	Arg	Ala	Leu	Asp	Val		
			580					585					590				
Glu	Asp	Ala	Lys	Leu	Tyr	Met	Asp	Phe	Leu	Val	Leu	Gly	Ile	Phe	Phe		
	595					600						605					
Leu	Ala	Leu	Arg	Leu	Leu	Ala	Tyr	Leu	Val	Leu	Arg	Tyr	Arg	Val	Lys		
	610					615					620						
Ser	Glu	Arg															
625																	

<210> 9  
 <211> 9  
 <212> PRT  
 <213> Homo sapiens

<400> 9  
 Gly Pro Ser Gly Ala Gly Lys Ser Thr  
 1 5

<210> 10  
 <211> 7  
 <212> PRT  
 <213> Homo sapiens

<400> 10  
 Leu Ser Gly Gly Gln Arg Lys  
 1 5

<210> 11  
 <211> 8  
 <212> PRT  
 <213> Homo sapiens

<400> 11  
 Val Met Phe Phe Asp Glu Pro Thr  
 1 5

<210> 12  
 <211> 2687

<212> DNA  
 <213> Homo sapiens

<400> 12

```
taccgagctc ggatccacta gtccagtgtg gtggaattgc ccttgccacc atggcggaga 60
agggcgtgga ggccgtgggc tgtggactag ggccgggggc tgtggccatg gccgtgacgc 120
tgaggagcgg ggccgaaccc cctgtgctga ccacgcacct gaagaagggtg gagaaccaca 180
tcaactgaagc ccagcgcttc tcccacctac ccaagcgctc agccgtggac atcgagtctc 240
tgagagctgtc ctattccgtg cgggaggggc cctgctggcg caaaaggggt tataagaccc 300
ttctcaagtg cctctcaggt aaattctgcc gccgggagct gattggcatc atgggcccct 360
caggggctgg caagtctaca ttcatgaaca tcttggcagg atacaggag tctggaatga 420
aggggcagat cctggttaat ggaaggccac gggagctgag gaccttccgc aagatgtcct 480
gctacatcat gcaagatgac atgctgctgc cgcacctcac ggtgttgaa gccatgatgg 540
tctctgctaa cctgaagctg agtgagaagc aggaggtgaa gaaggagctg gtgacagaga 600
tcctgacggc actgggcctg atgtcgtgct cccgcacgag gacagccctg ctctctggcg 660
ggcagaggaa gcgtctggcc atcgccctgg agctggtcaa caaccgcct gtcatgttct 720
ttgatgagcc caccagtggc ctggatagcg cctcttgttt ccaagtgggt tccctcatga 780
agtccctggc acaggggggc cgtaccatca tctgcacat ccaccagccc agtgccaagc 840
tctttgagat gtttgacaag ctctacatcc tgagccaggg tcagtgcac ttcaaaggcg 900
tggtcaccaa cctgatcccc tatctaaagg gactcggctt gcattgcccc acctaccaca 960
acccggctga cttcatcatc gaggtggcct ctggcgagta tggagacctg aaccccatgt 1020
tgttcagggc tgtgcagaat gggctgtgcg ctatggctga gaagaagagc agccctgaga 1080
agaacgaggt ccctgcccc a tgcctcctt gtcctccgga agtgatccc attgaaagcc 1140
acacctttgc caccagcacc ctacacagc tctgcatcct cttcaagagg accttcctgt 1200
ccatcctcag ggacacggtc ctgacccacc tacggttcat gtcccacgtg gttattggcg 1260
tgctcatcgg cctcctctac ctgcatattg gcgacgatgc cagcaaggtc ttcaacaaca 1320
ccggctgcct cttcttctcc atgctgttcc tcatgttcgc cgccctcatg ccaactgtgc 1380
tcaccttccc cttagagatg gcggtcttca tgaggagca cctcaactac tggtagagcc 1440
tcaaagcgta ttacctggcc aagaccatgg ctgacgtgcc ctttcagggt gtgtgtccgg 1500
tggtctactg cagcatgtgt tactggatga cgggccagcc cgctgagacc agccgcttcc 1560
tgctcttctc agccctggcc accgccaccg ccttgggtggc ccaatctttg gggctgtgta 1620
tcggagctgc ttccaactcc ctacaggtgg ccacttttgt gggcccagtt accgccatcc 1680
ctgtcctctt gttctcgggc ttctttgtca gcttcaagac catccccact tacctgcaat 1740
ggagctccta tctctcctat gtcaggtatg gctttgaggg tgtgrtcctg acgatctatg 1800
gcatggagcg aggagacctg acatgtttag aggaacgctg ccmgttccgg gagccacaga 1860
gcatectccg agcgtggat gtggaggatg ccaagctcta catggacttc ctggtcttgg 1920
gcatcttctt cctagccctg cggctgctgg cctaccttgt gctgcgttac cgggtcaagt 1980
cagagagata gaggttgcc ccagcctgta cccagcccc tgcagcagga agccccagt 2040
cccagccctt tgggactgtt ttaaccttat agacttgggc actggttcct ggcggggcta 2100
tcctctcctc ccttggctcc tccacaggct ggctgtcgga ctgcgtccc agcctgggct 2160
ctgggagtgg gggctccaqc cctccccact atgccagga gtcttcccaa gttgatgcac 2220
ttttagctt cctccctact ctctccaaca cctgcatgca aagactactg ggaggctgct 2280
gcctccttcc tgcccatggc accctcctct gctgtctgcc tgggagccct aggtctctta 2340
gggccccact tacaactgac caaagtggcc ccctctkggg gtccccacca cacaagtgtt 2400
tgtaaactgg gctgctataa ggttgagtt ccagggtgg gccctggtgg agtccactgg 2460
aagtcccatc atggtgtttg aaatggacag ggaaggactc tggaaagtctc ttcctcctcc 2520
tcctcttctc tccaccctta gacctggct gacttgaca atctgccagg acagaagctg 2580
gggttttctg tctaggtcac cactccaat cctgggggrt tggagrggcc tggggstgtg 2640
ggrtgsccca tccccctccc catcaccttt ggtgggggsa ggcctg 2687
```

<210> 13  
 <211> 646  
 <212> PRT  
 <213> Homo sapiens

&lt;220&gt;

&lt;221&gt; VARIANT

&lt;222&gt; 579, 598

&lt;223&gt; Xaa = Any Amino Acid

&lt;400&gt; 13

Met	Ala	Glu	Lys	Ala	Leu	Glu	Ala	Val	Gly	Cys	Gly	Leu	Gly	Pro	Gly
1				5					10					15	
Ala	Val	Ala	Met	Ala	Val	Thr	Leu	Glu	Asp	Gly	Ala	Glu	Pro	Pro	Val
		20						25					30		
Leu	Thr	Thr	His	Leu	Lys	Lys	Val	Glu	Asn	His	Ile	Thr	Glu	Ala	Gln
		35					40					45			
Arg	Phe	Ser	His	Leu	Pro	Lys	Arg	Ser	Ala	Val	Asp	Ile	Glu	Phe	Val
	50					55					60				
Glu	Leu	Ser	Tyr	Ser	Val	Arg	Glu	Gly	Pro	Cys	Trp	Arg	Lys	Arg	Gly
65					70					75					80
Tyr	Lys	Thr	Leu	Leu	Lys	Cys	Leu	Ser	Gly	Lys	Phe	Cys	Arg	Arg	Glu
				85					90					95	
Leu	Ile	Gly	Ile	Met	Gly	Pro	Ser	Gly	Ala	Gly	Lys	Ser	Thr	Phe	Met
			100					105					110		
Asn	Ile	Leu	Ala	Gly	Tyr	Arg	Glu	Ser	Gly	Met	Lys	Gly	Gln	Ile	Leu
		115					120					125			
Val	Asn	Gly	Arg	Pro	Arg	Glu	Leu	Arg	Thr	Phe	Arg	Lys	Met	Ser	Cys
	130					135					140				
Tyr	Ile	Met	Gln	Asp	Asp	Met	Leu	Leu	Pro	His	Leu	Thr	Val	Leu	Glu
145					150					155					160
Ala	Met	Met	Val	Ser	Ala	Asn	Leu	Lys	Leu	Ser	Glu	Lys	Gln	Glu	Val
				165					170					175	
Lys	Lys	Glu	Leu	Val	Thr	Glu	Ile	Leu	Thr	Ala	Leu	Gly	Leu	Met	Ser
			180					185					190		
Cys	Ser	Arg	Thr	Arg	Thr	Ala	Leu	Leu	Ser	Gly	Gly	Gln	Arg	Lys	Arg
		195					200					205			
Leu	Ala	Ile	Ala	Leu	Glu	Leu	Val	Asn	Asn	Pro	Pro	Val	Met	Phe	Phe
	210					215					220				
Asp	Glu	Pro	Thr	Ser	Gly	Leu	Asp	Ser	Ala	Ser	Cys	Phe	Gln	Val	Val
225					230					235					240
Ser	Leu	Met	Lys	Ser	Leu	Ala	Gln	Gly	Gly	Arg	Thr	Ile	Ile	Cys	Thr
			245						250					255	
Ile	His	Gln	Pro	Ser	Ala	Lys	Leu	Phe	Glu	Met	Phe	Asp	Lys	Leu	Tyr
			260					265					270		
Ile	Leu	Ser	Gln	Gly	Gln	Cys	Ile	Phe	Lys	Gly	Val	Val	Thr	Asn	Leu
		275					280					285			
Ile	Pro	Tyr	Leu	Lys	Gly	Leu	Gly	Leu	His	Cys	Pro	Thr	Tyr	His	Asn
	290					295					300				
Pro	Ala	Asp	Phe	Ile	Ile	Glu	Val	Ala	Ser	Gly	Glu	Tyr	Gly	Asp	Leu
305					310					315					320
Asn	Pro	Met	Leu	Phe	Arg	Ala	Val	Gln	Asn	Gly	Leu	Cys	Ala	Met	Ala
				325					330					335	
Glu	Lys	Lys	Ser	Ser	Pro	Glu	Lys	Asn	Glu	Val	Pro	Ala	Pro	Cys	Pro
			340					345					350		
Pro	Cys	Pro	Pro	Glu	Val	Asp	Pro	Ile	Glu	Ser	His	Thr	Phe	Ala	Thr
		355					360					365			
Ser	Thr	Leu	Thr	Gln	Phe	Cys	Ile	Leu	Phe	Lys	Arg	Thr	Phe	Leu	Ser

370		375		380
Ile Leu Arg Asp Thr Val	Leu Thr His Leu Arg Phe Met Ser His Val			
385	390	395		400
Val Ile Gly Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp				
	405	410		415
Ala Ser Lys Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu				
	420	425		430
Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu				
	435	440		445
Glu Met Ala Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu				
	450	455		460
Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val				
465	470	475		480
Val Cys Pro Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln				
	485	490		495
Pro Ala Glu Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala				
	500	505		510
Thr Ala Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser				
	515	520		525
Asn Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro				
	530	535		540
Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr				
545	550	555		560
Tyr Leu Gln Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu				
	565	570		575
Gly Val Xaa Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys				
	580	585		590
Leu Glu Glu Arg Cys Xaa Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala				
	595	600		605
Leu Asp Val Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly				
	610	615		620
Ile Phe Phe Leu Ala Leu Arg Leu Leu Ala Tyr Leu Val Leu Arg Tyr				
625	630	635		640
Arg Val Lys Ser Glu Arg				
	645			

&lt;210&gt; 14

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Oligonucleotide used in RT-PCR reaction.

&lt;400&gt; 14

gccaccatgg cggagaaggc gctggag

27

&lt;210&gt; 15

&lt;211&gt; 25

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;



<223> Oligonucleotide used in RT-PCR reaction.

<400> 15  
cccacaaata caactggcat ccctg 25

<210> 16  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Oligonucleotide used in RT-PCR reaction.

<400> 16  
taccgagctc ggatccacta gtcc 24

<210> 17  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Oligonucleotide used in RT-PCR reaction.

<400> 17  
caggccctgc cccacacaaa ggt 23

<210> 18  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 18  
Cys Leu Phe Phe Ser Met Leu Phe Leu Met Phe Ala Ala Leu Met Pro  
1 5 10 15  
Thr Val Leu Thr Phe Pro Leu  
20

<210> 19  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 19  
Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val Val Cys Pro  
1 5 10 15  
Val Val Tyr Cys Ser Ile Val  
20

<210> 20  
<211> 23

<213> Homo sapiens

Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala Thr Ala Leu Val Ala Gln  
1 5 10 15  
Ser Leu Gly Leu Leu Ile Gly  
20

<213> Homo sapiens

Thr Phe Val Gly Pro Val Thr Ala Ile Pro Val Leu Leu Phe Ser Gly  
1 5 10 15  
Phe Phe Val Ser Phe  
20

<213> Homo sapien

Leu Ser Tyr Val Arg Tyr Gly Phe Glu Gly Val Ile Leu Thr Ile Tyr  
1 5 10 15  
Gly Met

<213> Homo sapiens

Leu Tyr Met Asp Phe Leu Val Leu Gly Ile Phe Phe Leu Ala Leu Arg  
1 5 10 15  
Leu Leu Ala Tyr Leu Val Leu  
20